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Patent

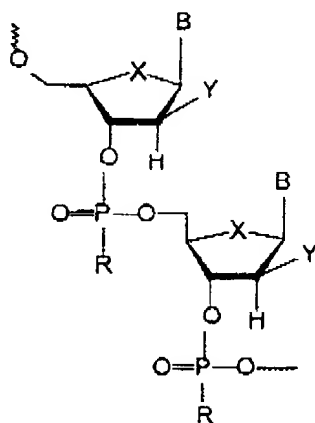
**AMENDMENTS TO THE CLAIMS**

This listing of claims will replace all prior versions and listings of claims in the application:

**Listing of Claims:**

Claim 1 (canceled)

Claim 2 (currently amended): ~~The composition of claim 1;~~ A composition to selectively prevent gene transcription and expression in a sequence-specific manner; which comprises an effective amount of at least one oligonucleotide selected from the group consisting of an oligonucleotide consisting of  $\beta$ -arabinose sugars hybridizing to a single stranded RNA to induce RNase H activity; and an oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring with halogen, alkyl,  $\text{CH}_2\text{F}$ ,  $\text{CF}_3$ ,  $\text{SCH}_3$ , allyl, amino, aryl, alkoxy, or azido and hybridizing to duplex DNA/DNA or DNA/RNA to form a triple helical complex, in association with an acceptable carrier, wherein said oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring has the formula:



wherein,

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B is selected from the group consisting of adenine, guanine, uracil, thymine, cytosine, inosine, and 5-methylcytosine;

Y at the 2' position of the sugar ring is selected from the group consisting of a halogen (~~fluorine~~, chlorine, bromine, iodine), alkyl, alkylhalide (e.g.,  $\text{CH}_2\text{F}$ ,  $\text{CF}_3$ ), alkylsulfhydryl ( $-\text{SCH}_3$ ), allyl, amino, aryl, alkoxy, and azido;

R at the internucleotide phosphate linkage is selected from the group consisting of oxygen, sulfur, methyl, amino, alkylamino, dialkylamino (the alkyl group having one to about 20 carbon atoms), methoxy, and ethoxy; and

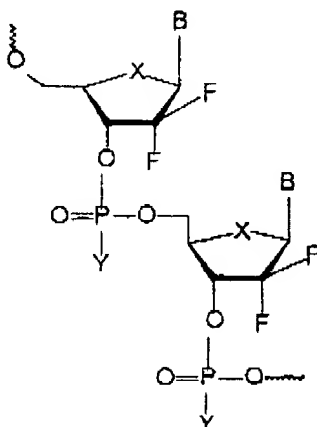
X at the furanose ring (position 4') is selected from the group consisting of oxygen, sulfur, and methylene ( $\text{CH}_2$ ).

Claim 3 (currently amended): ~~The composition of claim 1, A composition to selectively prevent gene transcription and expression in a sequence-specific manner, which comprises an effective amount of at least one oligonucleotide selected from the group consisting of an oligonucleotide consisting of  $\beta$ -arabinose sugars hybridizing to a single stranded RNA to induce RNase H activity; and an oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring with halogen, alkyl,  $\text{CH}_2\text{F}$ ,  $\text{CF}_3$ ,  $\text{SCH}_3$ , allyl, amino, aryl, alkoxy, or azido and hybridizing to duplex DNA/DNA or DNA/RNA to form a triple helical complex, in association with an acceptable carrier, wherein said oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring has the formula.~~

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wherein,

B is selected from the group consisting of adenine, guanine, uracil, thymine, cytosine, inosine, 5-methylcytosine;

Y at the internucleotide phosphate linkage is selected from the group consisting of oxygen, sulfur, methyl, amino, alkylamino, dialkylamino (the alkyl group having one to about 20 carbon atoms), methoxy, and ethoxy; and

X at the furanose ring (position 4') is selected from the group consisting of oxygen, sulfur, and methylene (CH<sub>2</sub>).

Claim 4 (currently amended): The composition of any one of claims 1 + 2 and 3, wherein said RNA is complementary RNA.

Claim 5 (original): The composition of claim 4, wherein said complementary RNA is cellular mRNA or viral RNA.

Claim 6 (currently amended): The composition of any one of claims 1 + 2 and 3, wherein said acceptable carrier is a pharmaceutically acceptable carrier for administration to a host.

Claims 7-17 (withdrawn)

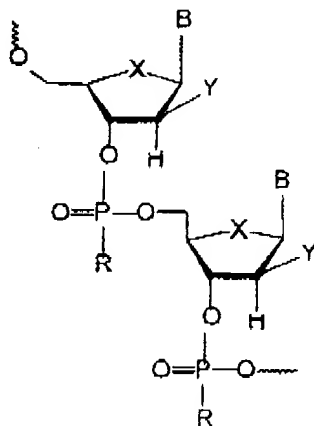
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Parent

Claim 18 (canceled)

Claim 19 (currently amended): ~~The oligonucleotide of claim 18;~~ An oligonucleotide for selectively preventing gene transcription and expression in a sequence-specific manner in a host; which comprises an oligonucleotide consisting of  $\beta$ -arabinose sugars hybridizing to a single stranded RNA to induce RNase H activity; and an oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring with halogen, alkyl,  $\text{CH}_2\text{F}$ ,  $\text{CF}_3$ ,  $\text{SCH}_3$ , allyl, amino, aryl, alkoxy, or azido and hybridizing to duplex DNA/DNA or DNA/RNA to form a triple helical complex; and at least one 2-O-methyl-D-ribose sugar at 3', 5' or both terminus of said oligonucleotide, wherein said oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring has the formula:



wherein,

B is selected from the group consisting of adenine, guanine, uracil, thymine, cytosine, inosine, and 5-methylcytosine;

Y at the 2' position of the sugar ring is selected from the group consisting of a halogen (~~fluorine, chlorine, bromine, iodine~~), alkyl, alkylthio (~~e.g.,~~  $\text{CH}_2\text{F}$ ,  $\text{CF}_3$ ), alkylsulthidryl ( $\text{SCH}_3$ ), allyl, amino, aryl, alkoxy, and azido;

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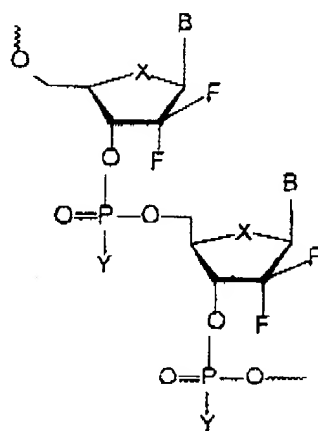
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R at the internucleotide phosphate linkage is selected from the group consisting of oxygen, sulfur, methyl, amino, alkylamino, dialkylamino (the alkyl group having one to about 20 carbon atoms), methoxy, and ethoxy; and

X at the furanose ring (position 4') is selected from the group consisting of oxygen, sulfur, and methylene (CH<sub>2</sub>).

Claim 20 (currently amended): ~~The oligonucleotide of claim 18;~~ An oligonucleotide for selectively preventing gene transcription and expression in a sequence-specific manner in a host; which comprises an oligonucleotide consisting of  $\beta$ -arabinose sugars hybridizing to a single stranded RNA to induce RNase H activity; and an oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring with halogen, alkyl, CH<sub>2</sub>F, CF<sub>3</sub>, SCH<sub>3</sub>, allyl, amino, aryl, alkoxy, or azido and hybridizing to duplex DNA/DNA or DNA/RNA to form a triple helical complex; and at least one 2-O-methyl-D-ribose sugar at 3', 5' or both terminus of said oligonucleotide, wherein said oligonucleotide consisting of  $\beta$ -arabinose sugars substituted at 2' position of the sugar ring has the formula:



wherein,

B is selected from the group consisting of adenine, guanine, uracil, thymine, cytosine, inosine, 5-methylcytosine;

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Y at the internucleotide phosphate linkage is selected from the group consisting of oxygen, sulfur, methyl, amino, alkylamino, dialkylamino (the alkyl group having one to about 20 carbon atoms), methoxy, and ethoxy; and

X at the furanose ring (position 4') is selected from the group consisting of oxygen, sulfur, and methylene (CH<sub>2</sub>).

Claims 21-30 (canceled)

Claim 31 (new): The composition of claim 2, wherein said halogen is selected from the group consisting of fluorine, chlorine, bromine and iodine.

Claim 32 (new): The composition of claim 3, wherein said halogen is selected from the group consisting of fluorine, chlorine, bromine and iodine.

Claim 33 (new): The composition of claim 19, wherein said halogen is selected from the group consisting of fluorine, chlorine, bromine and iodine.

Claim 34 (new): The composition of claim 20, wherein said halogen is selected from the group consisting of fluorine, chlorine, bromine and iodine.